This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.040 MGD wastewater treatment plant with an expansion design flow tier of 0.070 MGD. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260-00 et seq.

| | | | | |
|---|---|---|---|---|
| 1. | Facility Name and Mailing Address: | Eheart Subdivision STP<br>79 Garrett Street<br>Warrenton, VA 20186 | SIC Code: | 4952 WWTP |
| | Facility Location: | Rt. 670 & Rt. 607<br>Barboursville, VA 22923 | County: | Orange |
| | Facility Contact Name: | Robert Springer | Telephone Number:<br>Email Address: | 540-272-1009<br>springer351@gmail.com |
| 2. | Permit No.: | VA0080781 | Expiration Date of previous permit: | November 6, 2010 |
| | Other VPDES Permits associated with this facility: | | VAN040143 | |
| | Other Permits associated with this facility: | | None | |
| | E2/E3/E4 Status: | N/A | | |
| 3. | Owner Name: | Garrett Street, LLC | | |
| | Owner Contact/Title: | Robert N. Springer, Managing Member | Telephone Number: | 540-272-1009 |
| 4. | Application Complete Date: | March 10, 2010 | | |
| | Permit Drafted By: | Joan C. Crowther | Date Drafted: | June 15, 2011 |
| | Draft Permit Reviewed By: | Alison Thompson | Date Reviewed: | 6/17/11 |
| | WPM Review By: | Bryant Thomas | Date Reviewed: | 6/29/11 |
| | Public Comment Period : | Start Date: August 25, 2011 | End Date: | September 26, 2011 |

5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination dated December 30, 1998

| | | | |
|---|---|---|---|
| Receiving Stream Name : | Preddy Creek, UT | | |
| Drainage Area at Outfall: | 12.6 sq.mi. | River Mile: | 2BXAG0.66 |
| Stream Basin: | James River (Middle) | Subbasin: | None |
| Section: | 10 | Stream Class: | III |
| Special Standards: | None | Waterbody ID: | VAV-H27R |
| 7Q10 Low Flow: | 0.0 MGD | 7Q10 High Flow: | 0.0 MGD |
| 1Q10 Low Flow: | 0.0 MGD | 1Q10 High Flow: | 0.0 MGD |
| 30Q10 Low Flow: | 0.0 MGD | 30Q10 High Flow: | 0.0 MGD |
| Harmonic Mean Flow: | 0.0 MGD | 30Q5 Flow: | 0.0 MGD |
| 303(d) Listed: | Yes | | |
| TMDL Approved: | Yes | Date TMDL Approved: | Rivanna River Bacteria TMDL (includes Preddy Creek, North Fork Rivanna, and Rivanna) – EPA Approved 1/5/09<br>Rivanna River Benthic TMDL – EPA Approved 6/11/08<br>Preddy Creek (North Branch) Benthic TMDL – Due 2022 |

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

| | | | |
|---|---|---|---|
| ✓ | State Water Control Law | ✓ | EPA Guidelines |
| ✓ | Clean Water Act | ✓ | Water Quality Standards |
| ✓ | VPDES Permit Regulation | | Other |
| ✓ | EPA NPDES Regulation | | |

7. Licensed Operator Requirements: Class III

8. Reliability Class: Class II

9. Permit Characterization:

| | | | | | |
|---|---|---|---|---|---|
| ✓ | Private | | Effluent Limited | | Possible Interstate Effect |
| | Federal | ✓ | Water Quality Limited | | Compliance Schedule Required |
| | State | | Toxics Monitoring Program Required | | Interim Limits in Permit |
| | POTW | | Pretreatment Program Required | | Interim Limits in Other Document |
| ✓ | TMDL | | | | |

**10. Wastewater Sources and Treatment Description:**

The wastewater treatment plant has not been built at this time. Initial plans are for the 0.040 MGD facility to be built with a possible future expansion to 0.070 MGD.

The proposed system will be a privately owned sewage treatment plant which will serve a small residential community with approximately 114 homes. At this time, the proposed treatment system will consist of an extended aeration plant with activated sludge followed by sand filtration and disinfection. Effluent will flow into an aeration basin where primary treatment will be provided via activated sludge with extended aeration and secondary clarifier. Following the activated sludge plant, additional treatment will be provided by sand filtration. Chlorine disinfection followed dechlorination and post aeration will occur prior to discharging treated effluent to an unnamed tributary to Preddy Creek.

See Attachment 2 for a facility schematic/diagram.

TABLE 1 – Outfall Description

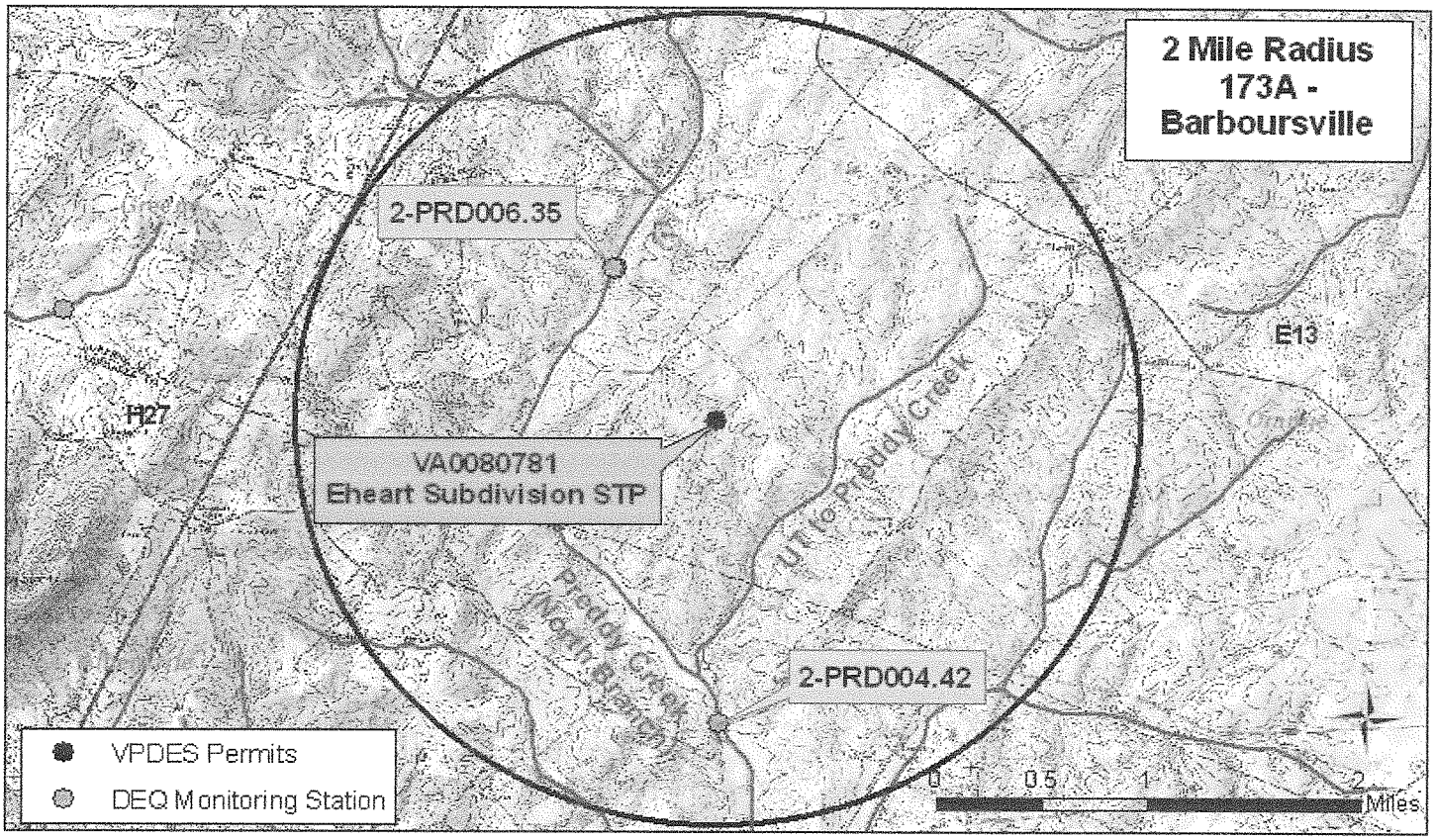
| Outfall Number | Discharge Sources | Treatment | Design Flows | Outfall Latitude and Longitude |
|---|---|---|---|---|
| 001 | Domestic Wastewater | See Item 10 above. | 0.040 MGD<br>0.070 MGD | 38° 11' 30" N<br>78° 21' 18" W |

**11. Sludge Treatment and Disposal Methods:**

Since this facility has not been built yet, the sludge disposal contractor has not been selected. It is the permittee's plan to hire a contractor to handle the sludge disposal properly.

**12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge**

There are no public water supply intakes located within a 5 mile radius of the outfall for this facility. There are no other VPDES permits within a 2 mile radius of this facility; however, there are 2 DEQ monitoring stations located within a 2 mile radius: 2-PRD004.42 is an ambient water quality monitoring station located at the Route 641 Bridge crossing approximately 1.7 miles downstream of the facility's proposed Outfall 001and 2-PRD006.35 is a biomonitoring station located "at gas right-of-way" off Rosewood Avenue with the latitude/longitude coordinates of 38° 12' 9.75"/-78° 21' 48.96".




**13. Material Storage:** The facility has not been built yet so there is not material storage on site.

**14. Site Inspection:** The facility has not been built so no site inspection was made for this permit reissuance.

**15. Receiving Stream Water Quality and Water Quality Standards:**

a) Ambient Water Quality Data

The nearest downstream DEQ ambient monitoring station is on Preddy Creek 2-PRD004.42, located at the Route 641 bridge crossing, approximately 1.7 miles downstream of Outfall 001. This DEQ Ambient Water Quality Monitoring Station is a Class III waters and is located within Section 10 of the James River Basin (Middle). The following is the monitoring summary for Station 2-PRD004.42, as taken from the 2010 Integrated Assessment:

2-PRD004.42 (2 violations of 14 samples for *E.coli*, impaired for VSCI)
2-PRD006.35 (Impaired for VSCI (Virginia Stream Condition Index))
2-PRD-PRD01-SOS (Medium Probability for Adverse Effects)
2-PRD-PRD01-SW (Impaired for VSCI)

This assessment unit is fully supporting the wildlife use. The aquatic life use is not supporting due to the impaired for VSCI benthic surveys. Recreational use is not supporting this cycle due to violations of the

*E.coli* Water Quality Standards. This assessment unit will be added to the existing recreational impairment downstream. This impairment has been addressed in the Preddy Creek TMDL for bacteria (Federal TMDL ID # 35770). Fish consumption use was not assessed.

The complete planning statement is found in Attachment 3.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2010 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories (wastewater, urban storm water, onsite/septic agriculture, air deposition). Fact Sheet Section 17.e provides additional information on specific nutrient limitations for this facility to implement the provisions of the Chesapeake Bay TMDL.

b) Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Preddy Creek, UT, is located within Section 10 of the James River Basin (Middle), and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

The Freshwater Water Quality Criteria/Wasteload Allocation Analysis dated June 7, 2011, (Attachment 4) details other water quality criteria applicable to the receiving stream.

Ammonia:
Ambient water quality data for the stream are not available. The 7Q10 and 1Q10 of the receiving stream are 0.0 MGD. The default temperature value of 25°C and pH value of 8.0 S.U. were used to calculate the ammonia water quality standards because no stream or effluent data was available.

Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/l calcium carbonate). There is no hardness data for this facility or for the receiving stream. Staff guidance suggests using a default hardness value of 50 mg/L $CaCO_3$ for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 4 are based on this default value.

Bacteria Criteria:
The Virginia Water Quality Standards at 9VAC25-260-170 A state that the following criteria shall apply to protect primary recreational uses in surface waters:

1) *E. coli* bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

| | Geometric Mean[1] |
|---|---|
| Freshwater *E. coli* (N/100 ml) | 126 |

[1]For a minimum of four weekly samples [taken during any calendar month].

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Preddy Creek, UT, is located within Section 10 of the James River Basin (Middle). There are no designated special standards for this Section.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on May 12, 2011, for records to determine if there are threatened or endangered species in the vicinity of the discharge. No threatened or endangered species were identified. Please see Attachment 5 for the database search results.

**16. Antidegradation (9VAC25-260-30):**

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on that the receiving stream at the proposed discharge point has a 7Q10 of 0.0 MGD. The critical flows for the stream are zero and at times after the wastewater treatment plant has been built, the stream flow will be comprised of only effluent. It is staff's best professional judgment that such streams are Tier I since the limits are set to meet the WQS. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

**17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:**

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:

Since the facility has not been built, there is no effluent data to review.

Since the facility will be treating domestic sewage, it can be assumed that the following pollutants require a wasteload allocation analysis: Total Residual Chlorine and Ammonia as N.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o[Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- $C_o$ = In-stream water quality criteria
- $Q_e$ = Design flow
- $Q_s$ = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- $C_s$ = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the $C_o$.

c) Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:

Due to staff having no stream or effluent data, the default pH (8.0 S.U.) and temperature (25°C) values were used to derive ammonia criteria. The ammonia water quality criteria, new wasteload allocations (WLAs) and new ammonia limits can be found in Attachment 6. DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage. The ammonia limits are as follows; Flow tier 0.040 MGD Ammonia monthly and weekly average concentrations = 2.4 mg/L and Flow tier 0.070 MGD Ammonia monthly average concentration = 1.6 mg/L; weekly average concentration = 2.4 mg/L.

Since the stream model dated December 21, 1988, required a year round TKN limit of 3.0 mg/L, the incorporation of the above ammonia effluent limitations in the permit will not be necessary. A TKN limit of 3.0 mg/L assumes that the remaining nitrogen is in the form of refractory organic compounds that will not be easily oxidized and that ammonia is removed when this TKN limit is met. The weekly average concentration will be 4.5 mg/L based on a multiplier of 1.5 times the monthly average concentration.

2) Total Residual Chlorine:

Chlorine is used for disinfection and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. A monthly average concentration of 0.008 mg/L

and a weekly average concentration of 0.010 mg/L are proposed for this discharge at the design flow of 0.040 MGD. A monthly average concentration of 0.007 mg/L and a weekly average concentration of 0.008 mg/L are proposed for this discharge at the design flow of 0.070 MGD. (See Attachment 7).

3) Metals/Organics:

No metals or organics data were available for review; therefore, no effluent limits are proposed.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), carbonaceous biochemical oxygen demand-5 day ($cBOD_5$), total suspended solids (TSS), total kjeldahl nitrogen (TKN), and pH limitations are proposed.

Dissolved Oxygen, $cBOD_5$, and TKN limitations are based on the stream modeling conducted in December 21, 1988 (Attachment 8) and are set to meet the water quality criteria for D.O. in the receiving stream. The stream model shows that the receiving stream dissolved oxygen will be maintained at 5.0 mg/L thus ensuring that the VA Water Quality Standards are being maintained. This stream model was run using a design flow of 0.070 MGD so the effluent limitations established are approved for any design flows up to 0.070 MGD.

It is staff's practice to equate the Total Suspended Solids limits with the $cBOD_5$ limits. TSS limits are established to equal $cBOD_5$ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

*E. coli* bacteria limitations are in accordance with the Water Quality Standards 9VAC25-260-170.

e) Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. Only concentration limits are now found in the individual VPDES permit when the facility installs nutrient removal technology. The basis for the concentration limits is 9VAC25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* which requires new or expanding discharges with design flows of $\geq$0.04 MGD to treat for TN and TP to either BNR levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

Pursuant to § 62.1-44.19:15.A.5, this facility has zero allocation for Total Nitrogen and/or Total Phosphorus loadings and is not authorized to discharge until the permittee demonstrates to the DEQ that he has acquired waste load allocations sufficient to offset his delivered Total Nitrogen and delivered Total Phosphorus loads. Therefore, this permit reissuance does not contain Total Nitrogen and/or Total Phosphorus effluent concentrations for either design flow tiers.

This facility has also obtained coverage under 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. This facility has coverage under this General Permit; the permit number is VAN040143. Because this facility has zero allocation for Total Nitrogen and/or Total Phosphorus loadings, an offset plan shall be provided to DEQ prior to or with the Certificate to Construct (CTC) application and shall be included in the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation For Total Nitrogen And Total Phosphorus Discharges And Nutrient Trading In The Chesapeake Bay Watershed. The offset plan shall be subject to a DEQ-approved trading contract prepared in accordance with 62.1-44.19:12 - :19 of the Law and 9VAC25-820-10 et seq., and which includes, but not limited to, the following:

a. Discussion of the source of the acquired allocations,
b. Discussion of other permitted facilities involved in the trade, and
c. Discussion of any non-point source allocations acquired.

f) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, $cBOD_5$, Total Suspended Solids, TKN, pH, Dissolved Oxygen, and Total Residual Chlorine.

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for $cBOD_5$ and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

**18. Antibacksliding:**

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

**19. Effluent Limitations/Monitoring Requirements:**

Design flow is 0.040 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the issuance of the Certificate to Operate (CTO) for the 0.070 MGD facility or the permit's expiration date, whichever occurs first.

| PARAMETER | BASIS FOR LIMITS | DISCHARGE LIMITATIONS | | | | MONITORING REQUIREMENTS | |
|---|---|---|---|---|---|---|---|
| | | Monthly Average | Weekly Average | Minimum | Maximum | Frequency | Sample Type |
| Flow (MGD) | NA | NL | NA | NA | NL | 1/D | Estimate |
| pH | 3 | NA | NA | 6.0 S.U. | 9.0 S.U. | 1/D | Grab |
| $cBOD_5$ | 3,5 | 15 mg/L 2.3 kg/day | 23 mg/L 3.5 kg/day | NA | NA | 1/M | Grab |
| Total Suspended Solids (TSS) | 2 | 15 mg/L 2.3 kg/day | 23 mg/L 3.5 kg/day | NA | NA | 1/M | Grab |
| DO | 3 | NA | NA | 7.0 mg/L | NA | 1/D | Grab |
| Total Kjeldahl Nitrogen (TKN) | 3,5 | 3.0 mg/L 0.45 kg/day | 4.5 mg/L 0.68 kg/day | NA | NA | 1/M | Grab |
| *E. coli* (Geometric Mean)[a] | 3 | 126 n/100mls | NA | NA | NA | 1/W | Grab |
| Total Residual Chlorine (after contact tank) | 2, 3, 4 | NA | NA | 1.0 mg/L | NA | 1/D | Grab |
| Total Residual Chlorine (after dechlorination) | 3 | 0.008 mg/L | 0.010 mg/L | NA | NA | 1/D | Grab |

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 8

*MGD* = Million gallons per day.
*NA* = Not applicable.
*NL* = No limit; monitor and report.
*S.U.* = Standard units.

*1/D* = Once every day.
*1/W* = Once every week.
*1/M* = Once every month.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.
[a] Samples shall be collected between 10:00 a.m. and 4:00 p.m.

**19. Effluent Limitations/Monitoring Requirements:**

Design flow is 0.070 MGD.
Effective Dates: During the period beginning with issuance of a Certificate to Operate (CTO) for the 0.070 MGD facility and lasting until the permit's expiration date.

| PARAMETER | BASIS FOR LIMITS | DISCHARGE LIMITATIONS | | | | MONITORING REQUIREMENTS | |
|---|---|---|---|---|---|---|---|
| | | Monthly Average | Weekly Average | Minimum | Maximum | Frequency | Sample Type |
| Flow (MGD) | NA | NL | NA | NA | NL | Continuous | TIRE |
| pH | 3 | NA | NA | 6.0 S.U. | 9.0 S.U. | 1/D | Grab |
| $cBOD_5$ | 3,5 | 15 mg/L 4.0 kg/day | 23 mg/L 6.0 kg/day | NA | NA | 1/W | 4H-C |
| Total Suspended Solids (TSS) | 2 | 15 mg/L 4.0 kg/day | 23 mg/L 6.0 kg/day | NA | NA | 1/W | 4H-C |
| DO | 3 | NA | NA | 7.0 mg/L | NA | 1/D | Grab |
| Total Kjeldahl Nitrogen (TKN) | 3,5 | 3.0 mg/L 0.80 kg/day | 4.5 mg/L 1.2 kg/day | NA | NA | 1/W | 4H-C |
| *E. coli* (Geometric Mean)[a] | 3 | 126 n/100mls | NA | NA | NA | 1/W | Grab |
| Total Residual Chlorine (after contact tank) | 2, 3, 4 | NA | NA | 1.0 mg/L | NA | 3/D at 4 hr intervals | Grab |
| Total Residual Chlorine (after dechlorination) | 3 | 0.007 mg/L | 0.008 mg/L | NA | NA | 3/D at 4 hr intervals | Grab |

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 8

*MGD* = Million gallons per day.
*NA* = Not applicable.
*NL* = No limit; monitor and report.
*S.U.* = Standard units.
*TIRE* = Totalizing, indicating and recording equipment.

*1/D* = Once every day.
*1/W* = Once per week.
*3/D* = Three times per day.

*4H-C*= A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 4-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of four (4) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum four (4) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

[a] Samples shall be collected between 10:00 a.m. and 4:00 p.m.

**20. Other Permit Requirements:**

a) Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.
These additional chlorine requirements are necessary per the Sewage Collection and Treatment Regulations at 9VAC25-70 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

**21. Other Special Conditions:**

a) 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. The facility is a PVOTW.

b) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. Within 90 days of the issuance of the Certificate to Operate of either the 0.040 MGD or 0.070 MGD facility, the permittee shall submit an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

c) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

d) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class III operator.

e) Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of II.

f) Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works

g) Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2., and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

h) Treatment Works Closure Plan. The State Water Control Law §62.1-44.15:1.1, makes it illegal for an owner to cease operation and fail to implement a closure plan when failure to implement the plan would result in harm to human health or the environment. This condition is used to notify the owner of the need for a closure plan where a facility is being replaced or is expected to close.

i) Nutrient Offsets. The Virginia General Assembly, in their 2005 session, enacted a new Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. Section 62.1-44.19:15 sets forth the requirements for new and expanded dischargers, which are captured by the requirements of the law, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.

j) Nutrient Reopener. 9VAC25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

k) Discharge Monitoring Report Submittal. This special condition delays the monthly DMR submittals until such time that the Certificate to Operate for either the 0.040 or 0.070 MGD facility has been issued. The

permittee is required to apply for e-DMR concurrent with the submittal of the Certificate to Operate application. Once the Certificate to Operate has been issued, the permittee is required to submit monthly e-DMRs to the DEQ.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

**23. Changes to the Permit from the Previously Issued Permit:**

a) Special Conditions:
1) The Indirect Dischargers special condition was removed because the proposed connections are to be residential homes. There are no industrial connections proposed.
2) The Water Quality Criteria Reopener special condition was removed because the facility's design flow tiers of 0.040 and 0.070 MGD does not required any additional effluent monitoring so there would be no need for this special condition to be included. Any additional effluent monitoring that would be needed to be added could be included at time of reissuance.
3) The Nutrient Reporting Calculations special condition was removed because the facility does not have to monitoring for Total Nitrogen and/or Total Phosphorus at this time. Should be facility be built, the permit will be reopened so that the nutrients can be addressed appropriately.
4) The Nutrient Reduction Credits – 0.070 MGD special conditions was removed because the facility does not have to monitoring for Total Nitrogen and/or Total Phosphorus at this time. Should be facility be built, the permit will be reopened so that the nutrient can be addressed appropriately.
5) The Discharge Monitoring Report Submittal special condition was removed and replaced with a special condition requiring eDMRs submittals once the facility has received its Certificate to Operate.
6) The Nutrient Offsets special condition was added because this facility does not have any waste load allocation for Total Nitrogen and/or Total Phosphorus and will be required to submit an approvable offset plan prior to or with the Certificate to Construct.
7) The Nutrient Reopener special condition was added to the permit because the facility does not have any waste load allocation for Total Nitrogen and/or Total Phosphorus and the permit will have to be modified once the permittee has decided how the nutrient wasteloads are going to be addressed.

b) Monitoring and Effluent Limitations:
1) Based on an email dated June 13, 2011, the permittee notified DEQ that he wished to increase the lower design flow tier from 0.030 MGD to 0.040 MGD. Due to this, changes were made to the monthly average and weekly maximum kilograms/day for $cBOD_5$, TSS, and TKN.
2) The Total Nitrogen and Total Phosphorus effluent limitations and monitoring requirements were removed from the 0.070 MGD effluent page. This was due to the fact that the facility has zero wasteload allocation for these parameters and the permittee will have to provide an approval offset plan prior to or with the request for the CTC application to be in compliance with §62.1-44.19:15.A.5 of the State Water Control Law.
3) The Total Residual Chlorine effluent limitations for the 0.070 MGD flow tier was changed to from a monthly average of 0.008 mg/L to 0.007 mg/L and the weekly maximum of 0.010 mg/L to 0.008 mg/L. This change was due to the increase in monitoring from once per day to three times per day.
4) *E. coli* bacteria effluent limitation and monitoring was included for both flow tiers to address the downstream bacteria TMDLs.

**24. Variances/Alternate Limits or Conditions:**

There are no variances/alternate limits or conditions in this permit.

**25. Public Notice Information:**

First Public Notice Date: August 25, 2011 Second Public Notice Date: September 1, 2011

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3925, joan.crowther@deq.virginia.gov. See Attachment 9 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. **303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):**

This facility discharges directly to an unnamed tributary to Preddy Creek. This unnamed tributary to Preddy Creek is not listed on the 2010 303(d) list. This unnamed tributary discharges into another unnamed tributary before joining Preddy Creek. Preddy Creek then flows into the North Fork Rivanna River, which flows into the Rivanna River.

Preddy Creek, North Fork Rivanna River, and Rivanna River are listed on the 2010 303(d) list for non attainment of *E.coli* bacteria. Preddy Creek and Rivanna River are also listed for benthics.

The Rivanna River Bacteria TMDL which includes Preddy Creek, North Fork Rivanna, and Rivanna River was approved by EPA on January 5 2009. This facility was given a WLA for *E.coli* of 1.22E+11 cfu/year which is based on the *E.coli* (Geometric mean) permit limitation of 126 n/100 mls.
The Rivanna River Benthic TMDL was approved by EPA on June 11, 2008 and the facility was given a WLA for Total Suspended Solids of 3.20E+03 lbs/year which is based on the Total Suspended Solids' permit limit of 15 mg/L and a design flow of 0.070 MGD.

The Preddy Creek (North Branch) Benthic TMDL is scheduled to be completed in 2022.

**Special Permit considerations:**
Include the TMDL re-opener special condition.

**27. Additional Comments:**

Previous Board Action(s): None.

Staff Comments: The delay in the reissuance of this permit was due to staff workload and other priority assignments.

Public Comment: No comments were received during the public notice.

EPA Checklist: The checklist can be found in Attachment 10.

Eheart Subdivision Sewage Treatment Plant
Fact Sheet Attachments

| Attachment | Description |
|---|---|
| 1 | Flow Frequency Determination dated December 30, 1998 |
| 2 | Facility Diagram |
| 3 | Planning Statement for Eheart Subdivision Sewage Treatment Plant dated May 17, 2011 |
| 4 | Freshwater Water Quality Criteria/Wasteload Allocated Analysis dated June 6, 2011 |
| 5 | DGIF Threatened and Endangered Species Database Search dated May 12, 2011 |
| 6 | Ammonia Effluent Calculation Results |
| 7 | TRC Effluent Calculation Results |
| 8 | Stream Model dated December 21, 1988 |
| 9 | Public Notice |
| 10 | EPA Checklist dated June 14, 2011 |

**MEMORANDUM**

**DEPARTMENT OF ENVIRONMENTAL QUALITY**
**Office of Water Quality Assessments**
**629 East Main Street P.O. Box 10009 Richmond, Virginia 23219**

**SUBJECT:** Flow Frequency Determination
Eheart Subdivision – #VA0080781

**TO:** Tom Faha, NRO

**FROM:** Paul E. Herman, P.E., WQAP

**DATE:** December 30, 1998.

**COPIES:** Ron Gregory, Charles Martin, File



This memo supersedes my October 18, 1993 memo to Doug Stockman concerning the subject VPDES permit.

The Eheart Subdivision discharges to an unnamed tributary of the Preddy Creek near Eheart, Virginia. Flow frequencies are required at this site for use by the permit writer in developing the VPDES permit.

The flow frequencies for the discharge receiving stream were determined by inspection of the USGS Barboursville Quadrangle topographic map. The map depicts the stream as intermittent. The flow frequencies for intermittent streams are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean. For modeling purposes, flow frequencies have been determined for the first perennial reach downstream of the discharge point.

The VDEQ operated a continuous record gage on the North Fork Rivanna River near Profitt, VA (#02032680) from 1970 to 1992. The gage was located at the Route 649 bridge , in Albemarle County, VA. The flow frequencies for the perennial point were determined using drainage area proportions and do not address any withdrawals, discharges, or springs which may lie upstream. The flow frequencies for the gage and the perennial point are presented below.:

**N.F. Rivanna River near Profitt, VA (#02032680):**

Drainage Area = 176 $mi^2$

| | |
|---|---|
| 1Q10 = 6.6 cfs | High Flow 1Q10 = 24 cfs |
| 7Q10 = 8.3 cfs | High Flow 7Q10 = 29 cfs |
| 30Q5 = 17 cfs | HM = 66 cfs |

**UT to Preddy Creek at perennial point:**

Drainage Area = 2.23 $mi^2$

| | |
|---|---|
| 1Q10 = 0.08 cfs | High Flow 1Q10 = 0.30 cfs |
| 7Q10 = 0.11 cfs | High Flow 7Q10 = 0.37 cfs |
| 30Q5 = 0.22 cfs | HM = 0.84 cfs |

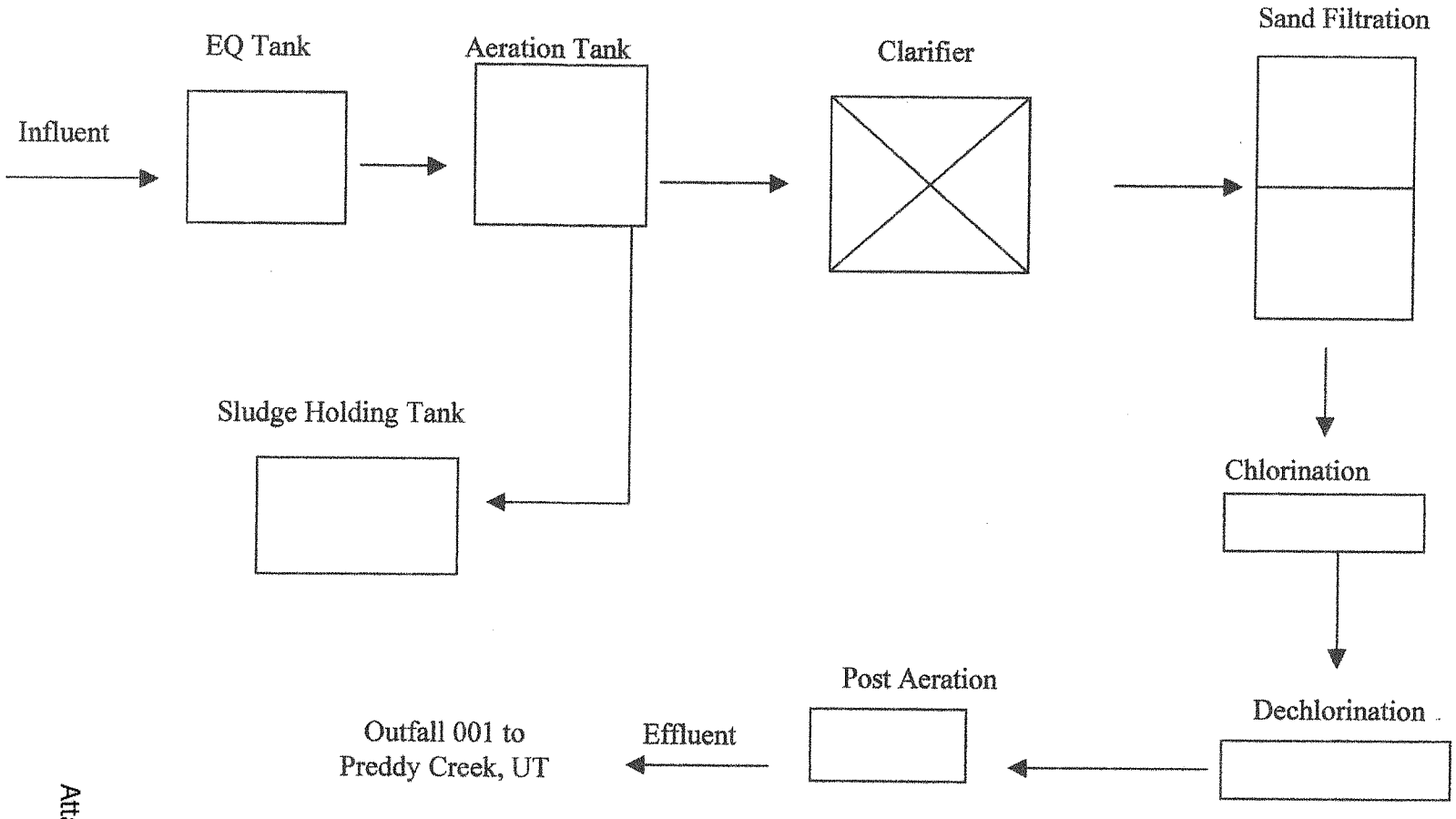
The high flow months are December through June.

If you have any questions concerning this analysis, please let me know.

Attachment 1

Eheart Subdivision

# 0.07 MGD Extended Aeration- Activated Sludge Package Treatment Plant Flow Diagram




Attachment 2

Attachment 2

To: Joan C. Crowther
From: Jennifer Carlson

Date: May 17, 2011
Subject: Planning Statement for Eheart Subdivision Sewage Treatment Plant
Permit No: VA0080781

Discharge Type: Municipal, Minor (hasn't been built yet)
Discharge Flow: tier 0.030 MGD and 0.070 MGD

Receiving Stream: Preddy Creek, UT
Latitude / Longitude: 38° 11' 30"/ 78° 21'18"
Waterbody ID: VAV-H27R/JR12
Rivermile: 0.66
Streamcode: 2BXAG
WQ Stds: Class III, Section 10

1. Is there monitoring data for the receiving stream? No. There is no monitoring data for the unnamed tributary to Preddy Creek.

   - If yes, please attach latest summary.
   - If no, where is the nearest downstream monitoring station.

   The nearest downstream DEQ ambient monitoring station is on Preddy Creek 2-PRD004.42, located at the Route 641 bridge crossing, approximately 1.7 miles downstream of Outfall 001. The following is the monitoring summary for Station 2-PRD004.42, as taken from the 2010 Integrated Assessment:

   *Class III - Piedmont Zones Waters; Section 10*

   *2-PRD004.42 (2 violations of 14 samples for e-coli, impaired for VSCI)*
   *2-PRD006.35 (Impaired for VSCI)*
   *2PRD-PRD01-SOS (Medium Probability for Adverse Effects)*
   *2-PRD-PRD01-SW (Impaired for VSCI)*

   *This assessment unit is fully supporting the wildlife use. The aquatic life use is not supporting due to the impaired for VSCI benthic surveys. Recreational use is not supporting this cycle due to violations of the e-coli WQS. This assessment unit will be added to the existing recreational impairment downstream. This impairment has been addressed in the Preddy Creek TMDL for bacteria (Federal TMDL ID # 35770). Fish consumption use was not assessed.*

2. Is the receiving stream on the current 303(d) list? No. The unnamed tributary to Preddy Creek is not on the current 303(d) list.

- If yes, what is the impairment? N/A

- Has the TMDL been prepared? N/A

- If yes, what is the WLA for the discharge? N/A

- If no, what is the schedule for the TMDL? N/A

3. If the answer to (2) above is no, is there a downstream 303(d) listed impairment?

Yes. Outfall 001 discharges into an unnamed tributary, which flows into another unnamed tributary before joining Preddy Creek. Preddy Creek flows into the North Fork Rivanna River, which flows into the Rivanna River.

- If yes, what is the impairment?

1. Approximately 1.4 miles downstream of the outfall, Preddy Creek (North Branch) is listed as impaired for:
    a. Recreation Use – *E. coli*: E-coli WQS violation at 2-PRD000.21 (4 of 24 samples) and 2-PRD004.42 (2 of 14 samples)
    b. Aquatic Life – benthic macroinvertebrate: General Standard violations at 2-PRD004.42 (Impaired for VSCI), 2-PRD006.35 (Impaired for VSCI) and 2-PRD-PRD01-SW (Impaired for VSCI)

2. The North Fork Rivanna River, approximately 5.9 miles downstream of Outfall 001 is listed as impaired for the Recreation Use: *E. coli* WQS violation at 2-RRN002.19 (5 of 24 samples).

3. The Rivanna River, located approximately 12.3 miles downstream of the outfall is listed as impaired for:
    a. Recreation Use – *E. coli*: E-coli WQS violation at 2-RVN037.54 (2 of 10 samples)
    b. Aquatic Life – benthic macroinvertebrate: General Standard violation at 2-RVN-RVN11-SW (Impaired for VSCI)

- Has a TMDL been prepared?

Bacteria TMDL(Rivanna, North Fork Rivanna, Preddy) – Yes
Benthic TMDL (Rivanna) – Yes
Benthic TMDL (Preddy) – No

- Will the TMDL include the receiving stream?

The unnamed tributary to Preddy Creek is not specifically included the TMDLs, but all upstream facilities were taken into consideration during the TMDL development.

- Is there a WLA for the discharge? Yes.

In the Rivanna River Bacteria TMDL, this facility was given a WLA for *E. coli* of **1.22E+11 cfu/year**.

In the Rivanna River Benthic TMDL, this facility was given a WLA for total suspended solids of **3.20E+03 lbs/year**.

- What is the schedule for the TMDL?

Rivanna River Bacteria TMDL – EPA approved 01/05/2009
Rivanna River Benthic TMDL – EPA approved 06/11/2008
Preddy Creek (North Branch) Benthic TMDL – due 2022

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

   There is a completed downstream TMDL for the nutrient impairments for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

5. Fact Sheet Requirements – Please provide information on other individual VPDES permits or VA DEQ monitoring stations located within a 2 mile radius of the facility. In addition, please provide information on any drinking water intakes located within a 5 mile radius of the facility.

   There are no public water supply intakes located within a 5 mile radius of the outfall for this facility. There are no other VPDES permits within a 2 mile radius of this facility, however there are 2 DEQ monitoring stations located within a 2 mile radius: 2-PRD004.42 and 2-PRD006.35.

# FRESHWATER
# WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Attachment 4

Facility Name: Eheart Subdivision WWTP  Permit No.: VA0080781

Receiving Stream: Preddy Creek, UT  Version: OWP Guidance Memo 00-2011 (8/24/00)

## Stream Information

| | |
|---|---|
| Mean Hardness (as CaCO3) = | 0 mg/L |
| 90% Temperature (Annual) = | 0 deg C |
| 90% Temperature (Wet season) = | 0 deg C |
| 90% Maximum pH = | 0 SU |
| 10% Maximum pH = | 0 SU |
| Tier Designation (1 or 2) = | 1 |
| Public Water Supply (PWS) Y/N? = | n |
| Trout Present Y/N? = | n |
| Early Life Stages Present Y/N? = | y |

## Stream Flows

| | |
|---|---|
| 1Q10 (Annual) = | 0 MGD |
| 7Q10 (Annual) = | 0 MGD |
| 30Q10 (Annual) = | 0 MGD |
| 1Q10 (Wet season) = | 0 MGD |
| 30Q10 (Wet season) | 0 MGD |
| 30Q5 = | 0 MGD |
| Harmonic Mean = | 0 MGD |

## Mixing Information

| | |
|---|---|
| Annual - 1Q10 Mix = | 100 % |
| - 7Q10 Mix = | 100 % |
| - 30Q10 Mix = | 100 % |
| Wet Season - 1Q10 Mix = | 100 % |
| - 30Q10 Mix = | 100 % |

## Effluent Information

| | |
|---|---|
| Mean Hardness (as CaCO3) = | 50 mg/L |
| 90% Temp (Annual) = | 25 deg C |
| 90% Temp (Wet season) = | deg C |
| 90% Maximum pH = | 8 SU |
| 10% Maximum pH = | SU |
| Discharge Flow = | 0.07 MGD |

| Parameter | Background | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | Most Limiting Allocations | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (ug/l unless noted) | Conc. | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH |
| Acenapthene | 0 | -- | -- | na | 9.9E+02 | -- | -- | na | 9.9E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.9E+02 |
| Acrolein | 0 | -- | -- | na | 9.3E+00 | -- | -- | na | 9.3E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.3E+00 |
| Acrylonitrile [C] | 0 | -- | -- | na | 2.5E+00 | -- | -- | na | 2.5E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.5E+00 |
| Aldrin [C] | 0 | 3.0E+00 | -- | na | 5.0E-04 | 3.0E+00 | -- | na | 5.0E-04 | -- | -- | -- | -- | -- | -- | -- | -- | 3.0E+00 | -- | na | 5.0E-04 |
| Ammonia-N (mg/l) (Yearly) | 0 | 8.41E+00 | 1.24E+00 | na | -- | 8.41E+00 | 1.24E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8.41E+00 | 1.24E+00 | na | -- |
| Ammonia-N (mg/l) (High Flow) | 0 | 8.41E+00 | 2.43E+00 | na | -- | 8.41E+00 | 2.43E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8.41E+00 | 2.43E+00 | na | -- |
| Anthracene | 0 | -- | -- | na | 4.0E+04 | -- | -- | na | 4.0E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.0E+04 |
| Antimony | 0 | -- | -- | na | 6.4E+02 | -- | -- | na | 6.4E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.4E+02 |
| Arsenic | 0 | 3.4E+02 | 1.5E+02 | na | -- | 3.4E+02 | 1.5E+02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 3.4E+02 | 1.5E+02 | na | -- |
| Barium | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Benzene [C] | 0 | -- | -- | na | 5.1E+02 | -- | -- | na | 5.1E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.1E+02 |
| Benzidine [C] | 0 | -- | -- | na | 2.0E-03 | -- | -- | na | 2.0E-03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.0E-03 |
| Benzo (a) anthracene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Benzo (b) fluoranthene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Benzo (k) fluoranthene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Benzo (a) pyrene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Bis2-Chloroethyl Ether [C] | 0 | -- | -- | na | 5.3E+00 | -- | -- | na | 5.3E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.3E+00 |
| Bis2-Chloroisopropyl Ether | 0 | -- | -- | na | 6.5E+04 | -- | -- | na | 6.5E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.5E+04 |
| Bis 2-Ethylhexyl Phthalate [C] | 0 | -- | -- | na | 2.2E+01 | -- | -- | na | 2.2E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.2E+01 |
| Bromoform [C] | 0 | -- | -- | na | 1.4E+03 | -- | -- | na | 1.4E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.4E+03 |
| Butylbenzylphthalate | 0 | -- | -- | na | 1.9E+03 | -- | -- | na | 1.9E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.9E+03 |
| Cadmium | 0 | 1.8E+00 | 6.6E-01 | na | -- | 1.8E+00 | 6.6E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.8E+00 | 6.6E-01 | na | -- |
| Carbon Tetrachloride [C] | 0 | -- | -- | na | 1.6E+01 | -- | -- | na | 1.6E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.6E+01 |
| Chlordane [C] | 0 | 2.4E+00 | 4.3E-03 | na | 8.1E-03 | 2.4E+00 | 4.3E-03 | na | 8.1E-03 | -- | -- | -- | -- | -- | -- | -- | -- | 2.4E+00 | 4.3E-03 | na | 8.1E-03 |
| Chloride | 0 | 8.6E+05 | 2.3E+05 | na | -- | 8.6E+05 | 2.3E+05 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8.6E+05 | 2.3E+05 | na | -- |
| TRC | 0 | 1.9E+01 | 1.1E+01 | na | -- | 1.9E+01 | 1.1E+01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.9E+01 | 1.1E+01 | na | -- |
| Chlorobenzene | 0 | -- | -- | na | 1.6E+03 | -- | -- | na | 1.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.6E+03 |

| Parameter | Background | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | **Most Limiting Allocations** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (ug/l unless noted) | Conc. | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | **Acute** | **Chronic** | **HH (PWS)** | **HH** |
| Chlorodibromomethane[C] | 0 | -- | -- | na | 1.3E+02 | -- | -- | na | 1.3E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.3E+02 |
| Chloroform | 0 | -- | -- | na | 1.1E+04 | -- | -- | na | 1.1E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.1E+04 |
| 2-Chloronaphthalene | 0 | -- | -- | na | 1.6E+03 | -- | -- | na | 1.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.6E+03 |
| 2-Chlorophenol | 0 | -- | -- | na | 1.5E+02 | -- | -- | na | 1.5E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.5E+02 |
| Chlorpyrifos | 0 | 8.3E-02 | 4.1E-02 | na | -- | 8.3E-02 | 4.1E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8.3E-02 | 4.1E-02 | na | -- |
| Chromium III | 0 | 3.2E+02 | 4.2E+01 | na | -- | 3.2E+02 | 4.2E+01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 3.2E+02 | 4.2E+01 | na | -- |
| Chromium VI | 0 | 1.6E+01 | 1.1E+01 | na | -- | 1.6E+01 | 1.1E+01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.6E+01 | 1.1E+01 | na | -- |
| Chromium, Total | 0 | -- | -- | 1.0E+02 | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Chrysene [C] | 0 | -- | -- | na | 1.8E-02 | -- | -- | na | 1.8E-02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-02 |
| Copper | 0 | 7.0E+00 | 5.0E+00 | na | -- | 7.0E+00 | 5.0E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7.0E+00 | 5.0E+00 | na | -- |
| Cyanide, Free | 0 | 2.2E+01 | 5.2E+00 | na | 1.6E+04 | 2.2E+01 | 5.2E+00 | na | 1.6E+04 | -- | -- | -- | -- | -- | -- | -- | -- | 2.2E+01 | 5.2E+00 | na | 1.6E+04 |
| DDD [C] | 0 | -- | -- | na | 3.1E-03 | -- | -- | na | 3.1E-03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.1E-03 |
| DDE [C] | 0 | -- | -- | na | 2.2E-03 | -- | -- | na | 2.2E-03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.2E-03 |
| DDT [C] | 0 | 1.1E+00 | 1.0E-03 | na | 2.2E-03 | 1.1E+00 | 1.0E-03 | na | 2.2E-03 | -- | -- | -- | -- | -- | -- | -- | -- | 1.1E+00 | 1.0E-03 | na | 2.2E-03 |
| Demeton | 0 | -- | 1.0E-01 | na | -- | -- | 1.0E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.0E-01 | na | -- |
| Diazinon | 0 | 1.7E-01 | 1.7E-01 | na | -- | 1.7E-01 | 1.7E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.7E-01 | 1.7E-01 | na | -- |
| Dibenz(a,h)anthracene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| 1,2-Dichlorobenzene | 0 | -- | -- | na | 1.3E+03 | -- | -- | na | 1.3E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.3E+03 |
| 1,3-Dichlorobenzene | 0 | -- | -- | na | 9.6E+02 | -- | -- | na | 9.6E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.6E+02 |
| 1,4-Dichlorobenzene | 0 | -- | -- | na | 1.9E+02 | -- | -- | na | 1.9E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.9E+02 |
| 3,3-Dichlorobenzidine[C] | 0 | -- | -- | na | 2.8E-01 | -- | -- | na | 2.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.8E-01 |
| Dichlorobromomethane [C] | 0 | -- | -- | na | 1.7E+02 | -- | -- | na | 1.7E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.7E+02 |
| 1,2-Dichloroethane [C] | 0 | -- | -- | na | 3.7E+02 | -- | -- | na | 3.7E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.7E+02 |
| 1,1-Dichloroethylene | 0 | -- | -- | na | 7.1E+03 | -- | -- | na | 7.1E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 7.1E+03 |
| 1,2-trans-dichloroethylene | 0 | -- | -- | na | 1.0E+04 | -- | -- | na | 1.0E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.0E+04 |
| 2,4-Dichlorophenol | 0 | -- | -- | na | 2.9E+02 | -- | -- | na | 2.9E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.9E+02 |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| 1,2-Dichloropropane[C] | 0 | -- | -- | na | 1.5E+02 | -- | -- | na | 1.5E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.5E+02 |
| 1,3-Dichloropropene [C] | 0 | -- | -- | na | 2.1E+02 | -- | -- | na | 2.1E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.1E+02 |
| Dieldrin [C] | 0 | 2.4E-01 | 5.6E-02 | na | 5.4E-04 | 2.4E-01 | 5.6E-02 | na | 5.4E-04 | -- | -- | -- | -- | -- | -- | -- | -- | 2.4E-01 | 5.6E-02 | na | 5.4E-04 |
| Diethyl Phthalate | 0 | -- | -- | na | 4.4E+04 | -- | -- | na | 4.4E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.4E+04 |
| 2,4-Dimethylphenol | 0 | -- | -- | na | 8.5E+02 | -- | -- | na | 8.5E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.5E+02 |
| Dimethyl Phthalate | 0 | -- | -- | na | 1.1E+06 | -- | -- | na | 1.1E+06 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.1E+06 |
| Di-n-Butyl Phthalate | 0 | -- | -- | na | 4.5E+03 | -- | -- | na | 4.5E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.5E+03 |
| 2,4 Dinitrophenol | 0 | -- | -- | na | 5.3E+03 | -- | -- | na | 5.3E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.3E+03 |
| 2-Methyl-4,6-Dinitrophenol | 0 | -- | -- | na | 2.8E+02 | -- | -- | na | 2.8E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.8E+02 |
| 2,4-Dinitrotoluene [C] | 0 | -- | -- | na | 3.4E+01 | -- | -- | na | 3.4E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.4E+01 |
| Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin | 0 | -- | -- | na | 5.1E-08 | -- | -- | na | 5.1E-08 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.1E-08 |
| 1,2-Diphenylhydrazine[C] | 0 | -- | -- | na | 2.0E+00 | -- | -- | na | 2.0E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.0E+00 |
| Alpha-Endosulfan | 0 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | -- | -- | -- | -- | -- | -- | -- | -- | 2.2E-01 | 5.6E-02 | na | 8.9E+01 |
| Beta-Endosulfan | 0 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | -- | -- | -- | -- | -- | -- | -- | -- | 2.2E-01 | 5.6E-02 | na | 8.9E+01 |
| Alpha + Beta Endosulfan | 0 | 2.2E-01 | 5.6E-02 | -- | -- | 2.2E-01 | 5.6E-02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.2E-01 | 5.6E-02 | -- | -- |
| Endosulfan Sulfate | 0 | -- | -- | na | 8.9E+01 | -- | -- | na | 8.9E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.9E+01 |
| Endrin | 0 | 8.6E-02 | 3.6E-02 | na | 6.0E-02 | 8.6E-02 | 3.6E-02 | na | 6.0E-02 | -- | -- | -- | -- | -- | -- | -- | -- | 8.6E-02 | 3.6E-02 | na | 6.0E-02 |
| Endrin Aldehyde | 0 | -- | -- | na | 3.0E-01 | -- | -- | na | 3.0E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.0E-01 |

| Parameter | Background | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | Most Limiting Allocations | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (ug/l unless noted) | Conc. | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH |
| Ethylbenzene | 0 | -- | -- | na | 2.1E+03 | -- | -- | na | 2.1E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.1E+03 |
| Fluoranthene | 0 | -- | -- | na | 1.4E+02 | -- | -- | na | 1.4E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.4E+02 |
| Fluorene | 0 | -- | -- | na | 5.3E+03 | -- | -- | na | 5.3E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.3E+03 |
| Foaming Agents | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Guthion | 0 | -- | 1.0E-02 | na | -- | -- | 1.0E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.0E-02 | na | -- |
| Heptachlor [C] | 0 | 5.2E-01 | 3.8E-03 | na | 7.9E-04 | 5.2E-01 | 3.8E-03 | na | 7.9E-04 | -- | -- | -- | -- | -- | -- | -- | -- | 5.2E-01 | 3.8E-03 | na | 7.9E-04 |
| Heptachlor Epoxide[C] | 0 | 5.2E-01 | 3.8E-03 | na | 3.9E-04 | 5.2E-01 | 3.8E-03 | na | 3.9E-04 | -- | -- | -- | -- | -- | -- | -- | -- | 5.2E-01 | 3.8E-03 | na | 3.9E-04 |
| Hexachlorobenzene[C] | 0 | -- | -- | na | 2.9E-03 | -- | -- | na | 2.9E-03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.9E-03 |
| Hexachlorobutadiene[C] | 0 | -- | -- | na | 1.8E+02 | -- | -- | na | 1.8E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E+02 |
| Hexachlorocyclohexane Alpha-BHC[C] | 0 | -- | -- | na | 4.9E-02 | -- | -- | na | 4.9E-02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.9E-02 |
| Hexachlorocyclohexane Beta-BHC[C] | 0 | -- | -- | na | 1.7E-01 | -- | -- | na | 1.7E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.7E-01 |
| Hexachlorocyclohexane Gamma-BHC[C] (Lindane) | 0 | 9.5E-01 | na | na | 1.8E+00 | 9.5E-01 | -- | na | 1.8E+00 | -- | -- | -- | -- | -- | -- | -- | -- | 9.5E-01 | -- | na | 1.8E+00 |
| Hexachlorocyclopentadiene | 0 | -- | -- | na | 1.1E+03 | -- | -- | na | 1.1E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.1E+03 |
| Hexachloroethane[C] | 0 | -- | -- | na | 3.3E+01 | -- | -- | na | 3.3E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.3E+01 |
| Hydrogen Sulfide | 0 | -- | 2.0E+00 | na | -- | -- | 2.0E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.0E+00 | na | -- |
| Indeno (1,2,3-cd) pyrene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Iron | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Isophorone[C] | 0 | -- | -- | na | 9.6E+03 | -- | -- | na | 9.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.6E+03 |
| Kepone | 0 | -- | 0.0E+00 | na | -- | -- | 0.0E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.0E+00 | na | -- |
| Lead | 0 | 4.9E+01 | 5.6E+00 | na | -- | 4.9E+01 | 5.6E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4.9E+01 | 5.6E+00 | na | -- |
| Malathion | 0 | -- | 1.0E-01 | na | -- | -- | 1.0E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.0E-01 | na | -- |
| Manganese | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Mercury | 0 | 1.4E+00 | 7.7E-01 | -- | -- | 1.4E+00 | 7.7E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.4E+00 | 7.7E-01 | -- | -- |
| Methyl Bromide | 0 | -- | -- | na | 1.5E+03 | -- | -- | na | 1.5E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.5E+03 |
| Methylene Chloride [C] | 0 | -- | -- | na | 5.9E+03 | -- | -- | na | 5.9E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.9E+03 |
| Methoxychlor | 0 | -- | 3.0E-02 | na | -- | -- | 3.0E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 3.0E-02 | na | -- |
| Mirex | 0 | -- | 0.0E+00 | na | -- | -- | 0.0E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.0E+00 | na | -- |
| Nickel | 0 | 1.0E+02 | 1.1E+01 | na | 4.6E+03 | 1.0E+02 | 1.1E+01 | na | 4.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | 1.0E+02 | 1.1E+01 | na | 4.6E+03 |
| Nitrate (as N) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Nitrobenzene | 0 | -- | -- | na | 6.9E+02 | -- | -- | na | 6.9E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.9E+02 |
| N-Nitrosodimethylamine[C] | 0 | -- | -- | na | 3.0E+01 | -- | -- | na | 3.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.0E+01 |
| N-Nitrosodiphenylamine[C] | 0 | -- | -- | na | 6.0E+01 | -- | -- | na | 6.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.0E+01 |
| N-Nitrosodi-n-propylamine[C] | 0 | -- | -- | na | 5.1E+00 | -- | -- | na | 5.1E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.1E+00 |
| Nonylphenol | 0 | 2.8E+01 | 6.6E+00 | -- | -- | 2.8E+01 | 6.6E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.8E+01 | 6.6E+00 | na | -- |
| Parathion | 0 | 6.5E-02 | 1.3E-02 | na | -- | 6.5E-02 | 1.3E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.5E-02 | 1.3E-02 | na | -- |
| PCB Total[C] | 0 | -- | 1.4E-02 | na | 6.4E-04 | -- | 1.4E-02 | na | 6.4E-04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.4E-02 | na | 6.4E-04 |
| Pentachlorophenol [C] | 0 | 7.7E-03 | 5.9E-03 | na | 3.0E+01 | 7.7E-03 | 5.9E-03 | na | 3.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | 7.7E-03 | 5.9E-03 | na | 3.0E+01 |
| Phenol | 0 | -- | -- | na | 8.6E+05 | -- | -- | na | 8.6E+05 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.6E+05 |
| Pyrene | 0 | -- | -- | na | 4.0E+03 | -- | -- | na | 4.0E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.0E+03 |
| Radionuclides | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Gross Alpha Activity (pCi/L) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Beta and Photon Activity (mrem/yr) | 0 | -- | -- | na | 4.0E+00 | -- | -- | na | 4.0E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.0E+00 |
| Radium 226 + 228 (pCi/L) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Uranium (ug/l) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |

| Parameter | Background | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | **Most Limiting Allocations** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (ug/l unless noted) | Conc. | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | **Acute** | **Chronic** | **HH (PWS)** | **HH** |
| Selenium, Total Recoverable | 0 | 2.0E+01 | 5.0E+00 | na | 4.2E+03 | 2.0E+01 | 5.0E+00 | na | 4.2E+03 | -- | -- | -- | -- | -- | -- | -- | -- | **2.0E+01** | **5.0E+00** | **na** | **4.2E+03** |
| Silver | 0 | 1.0E+00 | -- | na | -- | 1.0E+00 | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.0E+00** | **--** | **na** | **--** |
| Sulfate | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **--** |
| 1,1,2,2-Tetrachloroethane[C] | 0 | -- | -- | na | 4.0E+01 | -- | -- | na | 4.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **4.0E+01** |
| Tetrachloroethylene[C] | 0 | -- | -- | na | 3.3E+01 | -- | -- | na | 3.3E+01 | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **3.3E+01** |
| Thallium | 0 | -- | -- | na | 4.7E-01 | -- | -- | na | 4.7E-01 | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **4.7E-01** |
| Toluene | 0 | -- | -- | na | 6.0E+03 | -- | -- | na | 6.0E+03 | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **6.0E+03** |
| Total dissolved solids | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **--** |
| Toxaphene [C] | 0 | 7.3E-01 | 2.0E-04 | na | 2.8E-03 | 7.3E-01 | 2.0E-04 | na | 2.8E-03 | -- | -- | -- | -- | -- | -- | -- | -- | **7.3E-01** | **2.0E-04** | **na** | **2.8E-03** |
| Tributyltin | 0 | 4.6E-01 | 7.2E-02 | na | -- | 4.6E-01 | 7.2E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | **4.6E-01** | **7.2E-02** | **na** | **--** |
| 1,2,4-Trichlorobenzene | 0 | -- | -- | na | 7.0E+01 | -- | -- | na | 7.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **7.0E+01** |
| 1,1,2-Trichloroethane[C] | 0 | -- | -- | na | 1.6E+02 | -- | -- | na | 1.6E+02 | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **1.6E+02** |
| Trichloroethylene [C] | 0 | -- | -- | na | 3.0E+02 | -- | -- | na | 3.0E+02 | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **3.0E+02** |
| 2,4,6-Trichlorophenol [C] | 0 | -- | -- | na | 2.4E+01 | -- | -- | na | 2.4E+01 | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **2.4E+01** |
| 2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **--** |
| Vinyl Chloride[C] | 0 | -- | -- | na | 2.4E+01 | -- | -- | na | 2.4E+01 | -- | -- | -- | -- | -- | -- | -- | -- | **--** | **--** | **na** | **2.4E+01** |
| Zinc | 0 | 6.5E+01 | 6.6E+01 | na | 2.6E+04 | 6.5E+01 | 6.6E+01 | na | 2.6E+04 | -- | -- | -- | -- | -- | -- | -- | -- | **6.5E+01** | **6.6E+01** | **na** | **2.6E+04** |

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

| Metal | Target Value (SSTV) |
|---|---|
| Antimony | 6.4E+02 |
| Arsenic | 9.0E+01 |
| Barium | na |
| Cadmium | 3.9E-01 |
| Chromium III | 2.5E+01 |
| Chromium VI | 6.4E+00 |
| Copper | 2.8E+00 |
| Iron | na |
| Lead | 3.4E+00 |
| Manganese | na |
| Mercury | 4.6E-01 |
| Nickel | 6.8E+00 |
| Selenium | 3.0E+00 |
| Silver | 4.2E-01 |
| Zinc | 2.6E+01 |

Note: do not use QL's lower than the minimum QL's provided in agency guidance

## 0.070 MGD DISCHARGE FLOW - STREAM MIX PER "Mix.exe"

Discharge Flow Used for WQS-WLA Calculations (MGI 0.070

| | Stream Flows Allocated to Mix (MGD) | | Total Mix Flows Stream + Discharge (MGD) | |
|---|---|---|---|---|
| | Dry Season | Wet Season | Dry Season | Wet Season |
| 1Q10 | 0.000 | 0.000 | 0.070 | 0.070 |
| 7Q10 | 0.000 | N/A | 0.070 | N/A |
| 30Q10 | 0.000 | 0.000 | 0.070 | 0.070 |
| 30Q5 | 0.000 | N/A | 0.070 | N/A |
| Harm. Mean | 0.000 | N/A | 0.070 | N/A |
| Annual Avg. | 0.000 | N/A | 0.070 | N/A |

Stream/Discharge Mix Values

| | Dry Season | Wet Season |
|---|---|---|
| 1Q10 90th% Temp. Mix (deg C) | 25.000 | 0.000 |
| 30Q10 90th% Temp. Mix (deg C) | 25.000 | 0.000 |
| 1Q10 90th% pH Mix (SU) | 8.000 | 8.000 |
| 30Q10 90th% pH Mix (SU) | 8.000 | 8.000 |
| 1Q10 10th% pH Mix (SU) | 0.000 | N/A |
| 7Q10 10th% pH Mix (SU) | 0.000 | N/A |

| | Calculated | Formula Inputs |
|---|---|---|
| 1Q10 Hardness (mg/L as CaCO3) | 50.0 | 50.0 |
| 7Q10 Hardness (mg/L as CaCO3) | 50.0 | 50.0 |

**Ammonia - Dry Season - Acute**

| | |
|---|---|
| 90th Percentile pH (SU) | 8.000 |
| (7.204 - pH) | -0.796 |
| (pH - 7.204) | 0.796 |
| Trout Present Criterion (mg N/I | 5.615 |
| Trout Absent Criterion (mg N/L | 8.408 |
| Trout Present? | n |
| Effective Criterion (mg N/L) | 8.408 |

**Ammonia - Dry Season - Chronic**

| | |
|---|---|
| 90th Percentile Temp. (deg C) | 25.000 |
| 90th Percentile pH (SU) | 8.000 |
| MIN | 1.450 |
| MAX | 25.000 |
| (7.688 - pH) | -0.312 |
| (pH - 7.688) | 0.312 |
| Early LS Present Criterion (mg N | 1.238 |
| Early LS Absent Criterion (mg N/ | 1.238 |
| Early Life Stages Present? | y |
| Effective Criterion (mg N/L) | 1.238 |

**Ammonia - Wet Season - Acute**

| | |
|---|---|
| 90th Percentile pH (SU) | 8.000 |
| (7.204 - pH) | -0.796 |
| (pH - 7.204) | 0.796 |
| Trout Present Criterion (mg N/I | 5.615 |
| Trout Absent Criterion (mg N/L | 8.408 |
| Trout Present? | n |
| Effective Criterion (mg N/L) | 8.408 |

**Ammonia - Wet Season - Chronic**

| | |
|---|---|
| 90th Percentile Temp. (deg C) | 0.000 |
| 90th Percentile pH (SU) | 8.000 |
| MIN | 2.850 |
| MAX | 7.000 |
| (7.688 - pH) | -0.312 |
| (pH - 7.688) | 0.312 |
| Early LS Present Criterion (mg N | 2.434 |
| Early LS Absent Criterion (mg N/ | 3.952 |
| Early Life Stages Present? | y |
| Effective Criterion (mg N/L) | 2.434 |

## 0.070 MGD DISCHARGE FLOW - COMPLETE STREAM MIX

Discharge Flow Used for WQS-WLA Calculations (MGI 0.070

| | 100% Stream Flows Allocated to Mix (MGD) | | Total Mix Flows Stream + Discharge (MGD) | |
|---|---|---|---|---|
| | Dry Season | Wet Season | Dry Season | Wet Season |
| 1Q10 | 0.000 | 0.000 | 0.070 | 0.070 |
| 7Q10 | 0.000 | N/A | 0.070 | N/A |
| 30Q10 | 0.000 | 0.000 | 0.070 | 0.070 |
| 30Q5 | 0.000 | N/A | 0.070 | N/A |
| Harm. Mean | 0.000 | N/A | 0.070 | N/A |
| Annual Avg. | 0.000 | N/A | 0.070 | N/A |

Stream/Discharge Mix Values

| | Dry Season | Wet Season |
|---|---|---|
| 1Q10 90th% Temp. Mix (deg C) | 25.000 | 0.000 |
| 30Q10 90th% Temp. Mix (deg C) | 25.000 | 0.000 |
| 1Q10 90th% pH Mix (SU) | 8.000 | 8.000 |
| 30Q10 90th% pH Mix (SU) | 8.000 | 8.000 |
| 1Q10 10th% pH Mix (SU) | 0.000 | N/A |
| 7Q10 10th% pH Mix (SU) | 0.000 | N/A |

| | Calculated | Formula Inputs |
|---|---|---|
| 1Q10 Hardness (mg/L as CaCO3) = | 50.000 | 50.000 |
| 7Q10 Hardness (mg/L as CaCO3) = | 50.000 | 50.000 |

**Ammonia - Dry Season - Acute**

| | |
|---|---|
| 90th Percentile pH (SU) | 8.000 |
| (7.204 - pH) | -0.796 |
| (pH - 7.204) | 0.796 |
| Trout Present Criterion (mg N/I | 5.615 |
| Trout Absent Criterion (mg N/L | 8.408 |
| Trout Present? | n |
| Effective Criterion (mg N/L) | 8.408 |

**Ammonia - Dry Season - Chronic**

| | |
|---|---|
| 90th Percentile Temp. (deg C) | 25.000 |
| 90th Percentile pH (SU) | 8.000 |
| MIN | 1.450 |
| MAX | 25.000 |
| (7.688 - pH) | -0.312 |
| (pH - 7.688) | 0.312 |
| Early LS Present Criterion (mg N | 1.238 |
| Early LS Absent Criterion (mg N/ | 1.238 |
| Early Life Stages Present? | y |
| Effective Criterion (mg N/L) | 1.238 |

**Ammonia - Wet Season - Acute**

| | |
|---|---|
| 90th Percentile pH (SU) | 8.000 |
| (7.204 - pH) | -0.796 |
| (pH - 7.204) | 0.796 |
| Trout Present Criterion (mg N/I | 5.615 |
| Trout Absent Criterion (mg N/L | 8.408 |
| Trout Present? | n |
| Effective Criterion (mg N/L) | 8.408 |

**Ammonia - Wet Season - Chronic**

| | |
|---|---|
| 90th Percentile Temp. (deg C) | 0.000 |
| 90th Percentile pH (SU) | 8.000 |
| MIN | 2.850 |
| MAX | 7.000 |
| (7.688 - pH) | -0.312 |
| (pH - 7.688) | 0.312 |
| Early LS Present Criterion (mg N | 2.434 |
| Early LS Absent Criterion (mg N/ | 3.952 |
| Early Life Stages Present? | y |
| Effective Criterion (mg N/L) | 2.434 |

**VaFWIS - Department of Game and Inland Fisheries**

38,11,29.9 -78,21,17.9
**is the Search Point**

Submit Cancel

**Search Point**

- **Change** to "clicked" map point
- **Fixed** at 38,11,29.9 - 78,21,17.9

**Show Position Rings**

Yes No

1 mile and 1/4 mile at the **Search Point**

**Show Search Area**

Yes No

2 Search distance miles radius

**Search Point** is at map center

**Base Map** Choices

Topography

**Map Overlay** Choices

Current List: Position, Search

**Map Overlay Legend**

**Position Rings 1 mile and 1/4 mile at the Search Point**

**2 mile radius Search Area**

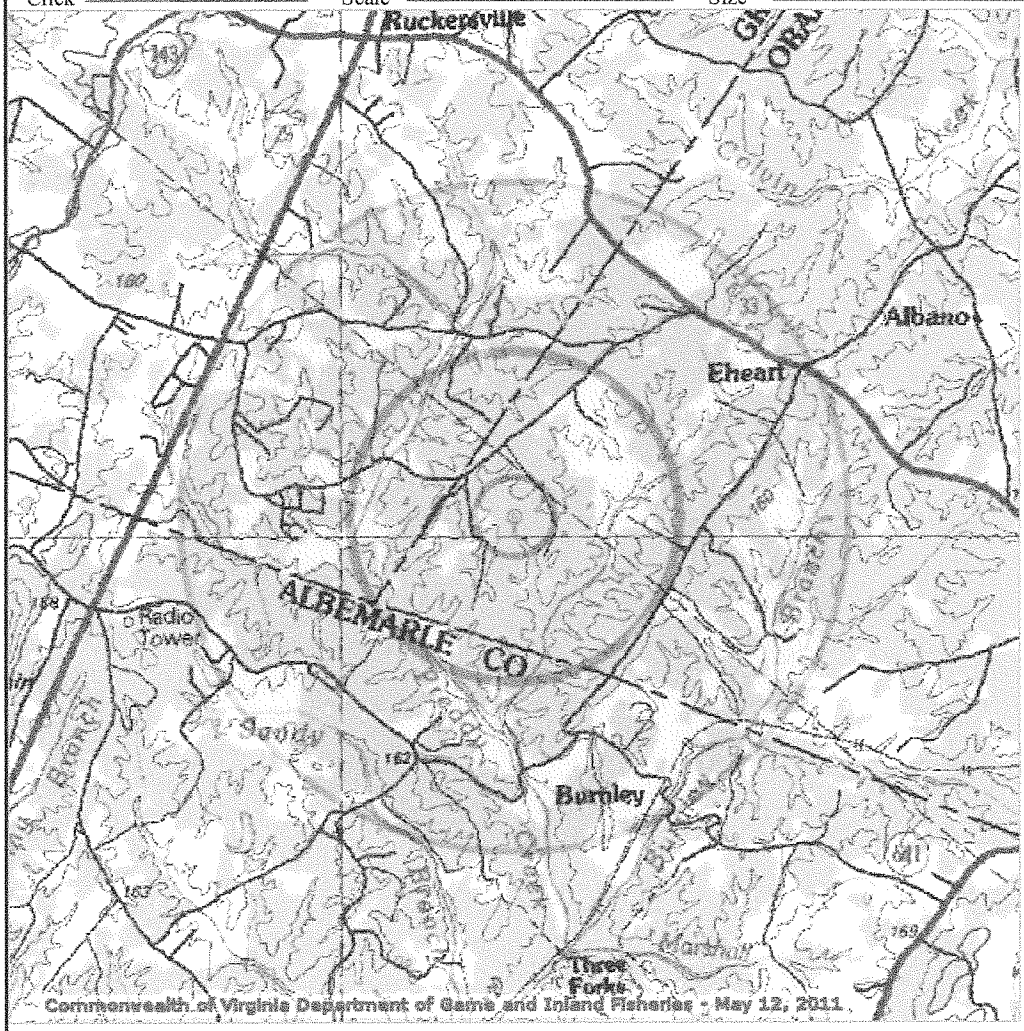
Refresh Browser Page

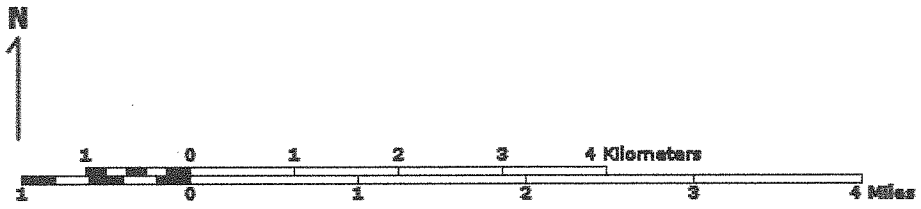
Map Click Pan

Map Scale In Zoom Out

Screen Size Small Size Big

Help




Point of Search 38,11,29.9 -78,21,17.9

Map Location 38,11,29.9 -78,21,17.9

Select **Coordinate System:**

- Degrees,Minutes,Seconds Latitude - Longitude
- Decimal Degrees Latitude - Longitude
- Meters UTM NAD83 East North Zone
- Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 17 NAD 1983 with left 726861 and top 4235201. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West.Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5 square miles.

Attachment 5

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2011-05-12 15:16:34 (qa/qc July 20, 2010 10:15 - tn=338455 dist=3218 I )

# VaFWIS Initial Project Assessment Report Compiled on 5/12/2011, 3:17:35 PM

Help

Observations reported or potential habitat occurs within a **2 mile radius around point 38,11,30.0 78,21,18.0**
in **003 Albemarle County, 079 Greene County, 137 Orange County, VA**

View Map of Site Location

477 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 23) (23 species with Status* or Tier I** or Tier II** )

| BOVA Code | Status* | Tier** | Common Name | Scientific Name | Confirmed | Database(s) |
|---|---|---|---|---|---|---|
| 060017 | FESE | I | Spinymussel, James | Pleurobema collina | | Habitat,BOVA,HU6 |
| 040096 | ST | I | Falcon, peregrine | Falco peregrinus | | BOVA |
| 040129 | ST | I | Sandpiper, upland | Bartramia longicauda | | BOVA |
| 040293 | ST | I | Shrike, loggerhead | Lanius ludovicianus | | BOVA,HU6 |
| 100155 | FSST | I | Skipper, Appalachian grizzled | Pyrgus wyandot | | HU6 |
| 040093 | FSST | II | Eagle, bald | Haliaeetus leucocephalus | | BOVA,HU6 |
| 060081 | ST | II | Floater, green | Lasmigona subviridis | | BOVA,HU6 |
| 060173 | FSST | II | Pigtoe, Atlantic | Fusconaia masoni | | BOVA,HU6 |
| 040292 | ST | | Shrike, migrant loggerhead | Lanius ludovicianus migrans | | BOVA |
| 100248 | FS | I | Fritillary, regal | Speyeria idalia idalia | | BOVA,HU6 |
| 060029 | FS | III | Lance, yellow | Elliptio lanceolata | | BOVA,HU6 |
| 030063 | CC | III | Turtle, spotted | Clemmys guttata | | BOVA,HU6 |
| 030012 | CC | IV | Rattlesnake, timber | Crotalus horridus | | BOVA,HU6 |
| 010077 | | I | Shiner, bridle | Notropis bifrenatus | | BOVA |
| 040225 | | I | Sapsucker, yellow-bellied | Sphyrapicus varius | | BOVA |
| 040319 | | I | Warbler, black-throated green | Dendroica virens | | BOVA |
| 040306 | | I | Warbler, golden-winged | Vermivora chrysoptera | | BOVA |
| 040038 | | II | Bittern, American | Botaurus lentiginosus | | BOVA |
| 040052 | | II | Duck, American black | Anas rubripes | | BOVA,HU6 |
| 040105 | | II | Rail, king | Rallus elegans | | BOVA |
| 040320 | | II | Warbler, cerulean | Dendroica cerulea | | BOVA,HU6 |
| 040304 | | II | Warbler, Swainson's | Limnothlypis swainsonii | | BOVA,HU6 |
| 040266 | | II | Wren, winter | Troglodytes troglodytes | | BOVA |

To view **All 477 species** View 477

* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; SC=State Candidate; CC=Collection Concern; SS=State Special Concern (obsolete January 1, 2011)

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;

III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

**Anadromous Fish Use Streams**

N/A

**Colonial Water Bird Survey**

N/A

**Threatened and Endangered Waters**

N/A

**Managed Trout Streams**

N/A

**Bald Eagle Concentration Areas and Roosts**

N/A

**Habitat Predicted for Aquatic WAP Tier I & II Species** ( 3 Reaches )

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

| Stream Name | Tier Species | | | | | | View Map |
|---|---|---|---|---|---|---|---|
| | Highest TE* | BOVA Code, Status*, Tier**, Common & Scientific Name | | | | | |
| (20802041) | FESE | 060017 | FESE | I | Spinymussel, James | Pleurobema collina | Yes |
| Burnley Branch (20802041) | FESE | 060017 | FESE | I | Spinymussel, James | Pleurobema collina | Yes |
| Preddy Creek (20802041) | FESE | 060017 | FESE | I | Spinymussel, James | Pleurobema collina | Yes |

**Habitat Predicted for Terrestrial WAP Tier I & II Species**

N/A

**Public Holdings:** N/A

Compiled on 5/12/2011, 3:17:35 PM I338455.0 report= IPA searchType= R dist= 3218
poi= 38,11,30.0 78,21,18.0
siteDD= 38.1916666 78.3550000

5/12/2011 3:52:04 PM

Facility = Eheart Subdivision WWTP 0.04 MGD
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 8.4
WLAc = 1.2
Q.L. = .2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

# observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
# < Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 2.42120411209957
Average Weekly limit = 2.42120411209957
Average Monthly LImit = 2.42120411209957

The data are:

9

5/12/2011 3:53:02 PM

Facility = Eheart Subdivision WWTP 0.07 MGD
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 8.4
WLAc = 1.2
Q.L. = .2
# samples/mo. = 4
# samples/wk. = 1

Summary of Statistics:

# observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
# < Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 2.42120411209957
Average Weekly limit = 2.42120411209957
Average Monthly LImit = 1.65543952931398

The data are:

9

5/12/2011 3:56:51 PM

Facility = Eheart Subdivision WWTP 0.07 MGD
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 19
WLAc = 11
Q.L. = 100
# samples/mo. = 90
# samples/wk. = 23

Summary of Statistics:

# observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
# < Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 16.0883226245855
Average Weekly limit = 8.2932988083132
Average Monthly LImit = 7.39793639872119

units of measurement = ug/L

The data are:

200

5/12/2011 3:55:25 PM

Facility = Eheart Subdivision WWTP 0.04 MGD
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 19
WLAc = 11
Q.L. = 100
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

# observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
# < Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 16.0883226245855
Average Weekly limit = 9.59676626920107
Average Monthly LImit = 7.9737131838758 units of measurement = ug/L

The data are:

200

# M E M O R A N D U M

VIRGINIA STATE WATER CONTROL BOARD
Office of Water Resources Management
P.O. Box 11143
2111 N. Hamilton Street Richmond, Virginia 23230

Subject: Eheart Subdivision (Orange County)
To: Cindy Sale - NRO
From: Martin G. Ferguson, Jr. via Fred Holt
Date: January 20, 1989
Copies: B. R. Tuxford

We have reviewed the revised modeling for the Eheart Subdivision discharge to the tributary to Freddy Creek (James River Basin) dated 12/28/88.

The modeling is acceptable and the model is approved for application. We have no problem with the proposed permit limits.

Please note that this model has not been checked for conformance with applicable areawide or 303(e) basinwide water quality management plans. This model must be in conformance with such plans, and it is the Regional Office's responsibility to insure such conformance.

RECEIVED
JAN 25 1989
BY
NORTHERN REGIONAL
OFFICE

1/24/89
Spoke w/ Burt Tuxford about Eheart Stream model. He said it was approved & mailed out.
NRO has not received yet
Ray

Attachment 8

**********

REGIONAL MODELING SYSTEM VERSION 1.2

**********

MODEL SIMULATION FOR THE EHEART SUBDIVISION STP DISCHARGE TO PREDDY CREEK

Model rerun per Burt Hufford's suggestions 12/21/88

THE SECTION BEING MODELED IS BROKEN INTO 2 SEGMENTS

THE SIMULATION STARTS AT EHEART SUBDIVISION STP

FLOW = .07 MGD cBOD5 = 15 Mg/L TKN = 3 Mg/l D.O. = 7 Mg/L

RESULTS WILL BE GIVEN AT .1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 6.843 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

| SEG. | LEN. Mi | VEL. F/S | K2 1/D | K1 1/D | KN 1/D | BENTHIC Mg/L | ELEV. Ft | TEMP. °C | DO-SAT Mg/L |
|---|---|---|---|---|---|---|---|---|---|
| 1.00 | 1.34 | 0.40 | 20.00 | 1.40 | 0.35 | 0.00 | 430.0 | 30.00 | 7.60 |
| 2.00 | 1.30 | 0.48 | 9.23 | 0.90 | 0.15 | 0.00 | 390.0 | 30.00 | 7.61 |

*** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

********** RESPONSE FOR SEGMENT 1 **********

| DISTANCE | DISSOLVED OXYGEN | cBOD | nBOD |
|---|---|---|---|
| 0.00 | 7.00 | 37.50 | 0.00 |
| 0.10 | 6.17 | 36.27 | 0.00 |
| 0.20 | 5.63 | 35.07 | 0.00 |
| 0.30 | 5.30 | 33.92 | 0.00 |
| 0.40 | 5.11 | 32.80 | 0.00 |
| 0.50 | 5.01 | 31.72 | 0.00 |
| 0.60 | 4.97 | 30.68 | 0.00 |
| 0.70 | 4.97 | 29.67 | 0.00 |
| 0.80 | 5.00 | 28.69 | 0.00 |
| 0.90 | 5.04 | 27.75 | 0.00 |
| 1.00 | 5.10 | 26.84 | 0.00 |
| 1.10 | 5.16 | 25.95 | 0.00 |
| 1.20 | 5.23 | 25.10 | 0.00 |
| 1.30 | 5.30 | 24.27 | 0.00 |
| 1.34 | 5.33 | 23.95 | 0.00 |

HE STANDARDS ARE VIOLATED IN THIS SEGMENT

HERE IS A TRIBUTARY AT THE END OF SEGMENT 1 WITH THE FOLLOWING:
LOW = .31 MGD cBOD5 = 3 Mg/L TKN = 0 Mg/L D.O. = 6.8 Mg/L

********** RESPONSE FOR SEGMENT 2 **********

| DISTANCE | DISSOLVED OXYGEN | cBOD | nBOD |
|---|---|---|---|
| 1.34 | 6.57 | 9.72 | 0.00 |
| 1.44 | 6.56 | 9.55 | 0.00 |
| 1.54 | 6.54 | 9.38 | 0.00 |
| 1.64 | 6.54 | 9.21 | 0.00 |
| 1.74 | 6.53 | 9.05 | 0.00 |
| 1.84 | 6.53 | 8.88 | 0.00 |
| 1.94 | 6.53 | 8.72 | 0.00 |
| 2.04 | 6.54 | 8.57 | 0.00 |
| 2.14 | 6.54 | 8.42 | 0.00 |
| 2.24 | 6.55 | 8.27 | 0.00 |
| 2.34 | 6.56 | 8.12 | 0.00 |
| 2.44 | 6.57 | 7.97 | 0.00 |
| 2.54 | 6.58 | 7.83 | 0.00 |
| 2.64 | 6.59 | 7.69 | 0.00 |

ANTIDEGRADATION IS VIOLATED IN THIS SEGMENT

ΔDO 6.84
6.53
ΔDO .31

OK

THE NAME OF THE DATA FILE IS: C:jfeheart.MOD

THE STREAM NAME IS: PREDDY CREEK
THE RIVER BASIN IS: JAMES RIVER
THE CLASSIFICATION IS: III
THE SECTION # IS: 10

STANDARDS VIOLATED (Y/N) = N
STANDARDS APPROPRIATE (Y/N) = Y
DISCHARGE WITHIN 3 MILES (Y/N) = N
PSTREAM DISCHARGE FLOW = 0
OUNDARY BOD5 = 0
OUNDARY TKN = 0
OUNDARY D.O. = 0
NTIDEGRADATION APPLIES (Y/N) = Y - applies only to 2nd segment

HE DISCHARGE BEING MODELED IS EHEART SUBDIVISION STP

ROPOSED LIMITS ARE:
FLOW = .07
C BOD5 = 15
TKN = 3 (seasonal - April 1 - Oct 31)
D.O. = 7

HE NUMBER OF SEGMENTS TO BE MODELED = 2
HE GAUGE NAME IS NORTH FORK RIVANNA RIVER
Q10 WILL BE CALCULATED BY DRAINAGE AREA COMPARISION
AUGE DRAINAGE AREA = 176
JAGE 7Q10 = 5.3
AINAGE AREA AT DISCHARGE = .25
SERVED FLOW AT GUAGE = 0
SERVED FLOW AT DISCHARGE = 0
THE STREAM, AT THE DISCHARGE, A DRY DITCH?=Y

SEGMENT INFORMATION

####### SEGMENT # 1 #######

EGMENT ENDS BECAUSE TRIBUTARY ENTERS

EGMENT LENGTH = 1.34
EGMENT WIDTH = 2
EGMENT DEPTH = .4
EGMENT VELOCITY = .15
ISTANCE OF UPSTREAM END FROM EHEART SUBDIVISION STP 0
AINAGE AREA AT START = .25
AINAGE AREA AT END = 2.41
EVATION AT START = 460
EVATION AT END = 400

OLS AND RIFFLES (Y\N) = N

OSS SECTION IS RECTANGLULAR
ANNEL CHARACTERISTIC = MODEST MEANDERS
TTOM TYPE = SILT
UDGE DEPOSITS ARE NONE
UATIC PLANTS ARE NONE
GAE OBSERVED = NONE
TER COLORED GREEN (Y/N) =N

TRIBUTARY DATA
FLOW = .31
BOD5 = 3
TKN = 0
D.O. = 6.8

SEGMENT INFORMATION

####### SEGMENT # 2 #######

EGMENT ENDS BECAUSE TRIBUTARY ENTERS

EGMENT LENGTH = 1.3
EGMENT WIDTH = 3.6
EGMENT DEPTH = .9
EGMENT VELOCITY = .15
ISTANCE OF UPSTREAM END FROM EHEART SUBDIVISION STP 1.3
RAINAGE AREA AT START = 12.77
RAINAGE AREA AT END = 12.77
LEVATION AT START = 400
LEVATION AT END = 380

OOLS AND RIFFLES (Y\N) = N

ROSS SECTION IS RECTANGLULAR
HANNEL CHARACTERISTIC = STRAIGHT
OTTOM TYPE = SILT
LUDGE DEPOSITS ARE NONE
QUATIC PLANTS ARE NONE
LGAE OBSERVED = NONE
ATER COLORED GREEN (Y/N) =N

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Orange County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2011 to 5:00 p.m. on XXX, 2011

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Garrett Street, LLC, 79 Garrett Street, Warrenton, VA 20186, VA0080781

NAME AND ADDRESS OF FACILITY: Eheart Subdivision Sewage Treatment Plant, Rt. 670 & Rt. 607, Barboursville, VA 22923

PROJECT DESCRIPTION: Garrett Street, LLC has applied for a reissuance of a permit for the private Eheart Subdivision Sewage Treatment Plant. The applicant proposes to treated sewage wastewaters from residential areas at a rate of 0.070 million gallons per day into a water body. The sludge will be disposed by a private contractor. The facility proposes to release the treated sewage in the Preddy Creek, UT in Orange County in the James River (Middle) watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, $cBOD_5$, Chlorine, Total Suspended Solids, *E.coli* bacteria, Dissolved Oxygen, and Total Kjeldahl Nitrogen.

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Joan C. Crowther
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3925 E-mail: joan.crowther@deq.virginia.gov Fax: (703) 583-3821

Attachment 9

Revised 2/2003

***State "Transmittal Checklist" to Assist in Targeting***
***Municipal and Industrial Individual NPDES Draft Permits for Review***

**Part I. State Draft Permit Submission Checklist**

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

| | |
|---|---|
| Facility Name: | Eheart Subdivision Sewage Treatment Plant |
| NPDES Permit Number: | VA0080781 |
| Permit Writer Name: | Joan C. Crowther |
| Date: | June 14, 2011 |

**Major** [ ] **Minor** [X ] **Industrial** [ ] **Municipal** [ X ]

| **I.A. Draft Permit Package Submittal Includes:** | **Yes** | **No** | **N/A** |
|---|---|---|---|
| 1. Permit Application? | X | | |
| 2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)? | X | | |
| 3. Copy of Public Notice? | X | | |
| 4. Complete Fact Sheet? | X | | |
| 5. A Priority Pollutant Screening to determine parameters of concern? | X | | |
| 6. A Reasonable Potential analysis showing calculated WQBELs? | X | | |
| 7. Dissolved Oxygen calculations? | X | | |
| 8. Whole Effluent Toxicity Test summary and analysis? | | | X |
| 9. Permit Rating Sheet for new or modified industrial facilities? | | | X |

| **I.B. Permit/Facility Characteristics** | **Yes** | **No** | **N/A** |
|---|---|---|---|
| 1. Is this a new, or currently unpermitted facility? | | X | |
| 2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit? | X | | |
| 3. Does the fact sheet **or** permit contain a description of the wastewater treatment process? | X | | |
| 4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit? Facility is not built yet. | | X | |
| 5. Has there been any change in streamflow characteristics since the last permit was developed? | | X | |
| 6. Does the permit allow the discharge of new or increased loadings of any pollutants? | | X | |
| 7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses? | X | | |
| 8. Does the facility discharge to a 303(d) listed water? Not directly, but 303(d) listed downstream | | X | |
| a. Has a TMDL been developed and approved by EPA for the impaired water? | X | | |
| b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit? | X | | |
| c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water? | X | | |
| 9. Have any limits been removed, or are any limits less stringent, than those in the current permit? | X | | |
| 10. Does the permit authorize discharges of storm water? | | X | |
| | | | |

Attachment 10

| I.B. Permit/Facility Characteristics – cont. | Yes | No | N/A |
|---|---|---|---|
| 11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production? | | X | |
| 12. Are there any production-based, technology-based effluent limits in the permit? | | X | |
| 13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures? | X | | |
| 14. Are any WQBELs based on an interpretation of narrative criteria? | | X | |
| 15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations? | | X | |
| 16. Does the permit contain a compliance schedule for any limit or condition? | | X | |
| 17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)? | | X | |
| 18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated? | X | | |
| 19. Is there any indication that there is significant public interest in the permit action proposed for this facility? | | X | |
| 20. Have previous permit, application, and fact sheet been examined? | X | | |

**Part II. NPDES Draft Permit Checklist**

**Region III NPDES Permit Quality Checklist – for POTWs**
*(To be completed and included in the record only for POTWs)*

| II.A. Permit Cover Page/Administration | Yes | No | N/A |
|---|---|---|---|
| 1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)? | X | | |
| 2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)? | X | | |

| II.B. Effluent Limits – General Elements | Yes | No | N/A |
|---|---|---|---|
| 1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)? | X | | |
| 2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit? | X | | |

| II.C. Technology-Based Effluent Limits (POTWs) | Yes | No | N/A |
|---|---|---|---|
| 1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH? | X | | |
| 2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133? | X | | |
| a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved? | | | X |
| 3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)? | X | | |
| 4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits? | X | | |
| 5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)? | | X | |
| a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations? | | | X |

| II.D. Water Quality-Based Effluent Limits | Yes | No | N/A |
|---|---|---|---|
| 1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality? | X | | |
| 2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL? | X | | |
| 3. Does the fact sheet provide effluent characteristics for each outfall? | X | | |
| 4. Does the fact sheet document that a "reasonable potential" evaluation was performed? | X | | |
| a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures? | X | | |
| b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone? | X | | |
| c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"? | X | | |
| d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)? | | X | |
| e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined? | X | | |

| II.D. Water Quality-Based Effluent Limits – cont. | Yes | No | N/A |
|---|---|---|---|
| 5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet? | X | | |
| 6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established? | X | | |
| 7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)? | X | | |
| 8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy? | X | | |

| II.E. Monitoring and Reporting Requirements | Yes | No | N/A |
|---|---|---|---|
| 1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations? | X | | |
| a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver? | | | X |
| 2. Does the permit identify the physical location where monitoring is to be performed for each outfall? | X | | |
| 3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements? | | X | |
| 4. Does the permit require testing for Whole Effluent Toxicity? | | X | |

| II.F. Special Conditions | Yes | No | N/A |
|---|---|---|---|
| 1. Does the permit include appropriate biosolids use/disposal requirements? | X | | |
| 2. Does the permit include appropriate storm water program requirements? | | | X |

| II.F. Special Conditions – cont. | Yes | No | N/A |
|---|---|---|---|
| 3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements? | | | X |
| 4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations? | X | | |
| 5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]? | | X | |
| 6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)? | | X | |
| a. Does the permit require implementation of the "Nine Minimum Controls"? | | | X |
| b. Does the permit require development and implementation of a "Long Term Control Plan"? | | | X |
| c. Does the permit require monitoring and reporting for CSO events? | | | X |
| 7. Does the permit include appropriate Pretreatment Program requirements? | | X | |

| II.G. Standard Conditions | Yes | No | N/A |
|---|---|---|---|
| 1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions? | X | | |

**List of Standard Conditions – 40 CFR 122.41**

| | | |
|---|---|---|
| Duty to comply | Property rights | Reporting Requirements |
| Duty to reapply | Duty to provide information | Planned change |
| Need to halt or reduce activity | Inspections and entry | Anticipated noncompliance |
| not a defense | Monitoring and records | Transfers |
| Duty to mitigate | Signatory requirement | Monitoring reports |
| Proper O & M | Bypass | Compliance schedules |
| Permit actions | Upset | 24-Hour reporting |
| | | Other non-compliance |

| | | | |
|---|---|---|---|
| 2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]? | | X | |

**Part III. Signature Page**

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

| | |
|---|---|
| Name | Joan C. Crowther |
| Title | VPDES Permit Writer |
| Signature |  |
| Date | June 14, 2011 |